REMARKS

Claims 1-25 are now pending in the application. Claims 11-25 are withdrawn as to a non-elected group. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

Claims 1-10 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Denton et al. (U.S. Pat. No. 6,010,606) (hereinafter Denton). This rejection is respectfully traversed.

Independent claim 1 of the present disclosure contains features that are not present in the Denton reference and therefore is not anticipated by Denton. In particular, claim 1 includes a membrane-electrode assembly that has permeable diffusion media that is rigid along a transverse axis, flexible along a lateral axis and having a substantially incompressible thickness, wherein the transverse axis (i.e., the rigid axis) crosses first channels of the flow field.

For example, a portion of a PEM fuel cell stack constructed according to the teachings of the present disclosure is shown in FIG. 2. The transverse (rigid) axis of the permeable diffusion media 32a, b corresponds to the x-axis in FIG. 2, and the flexible lateral axis corresponds to the y-axis, which is parallel to the flow channels 20a, b. The z-axis corresponds to the thickness of the permeable diffusion media as shown in FIG. 2, which as claimed, has a substantially incompressible thickness.

The flexible lateral axis (i.e., y-axis) is aligned with the machine direction so the permeable diffusion media is flexible and easily rollable in this direction. Paragraphs

[0029] & [0024]. The rigid transverse axis (i.e., x-axis) is aligned with the cross-machine direction. Therefore, the permeable diffusion media is rigid along the transverse axis that crosses the channels thereby preventing the permeable diffusion media from impinging or tenting into the channels. Paragraph [0025] and FIG. 3.

In contrast to the present claims, Denton discloses a gas diffusion electrode of non-woven fibers that is expressly flexible. The fibers themselves may be isotropic or anisotropic, depending on their alignment. Methods of laying down the layer can impart a directional force (e.g., extrusion) which can align fibers. However, the overall Denton electrode is free-standing, dimensionally stable and highly flexible. Denton col. 3, lines 40-51; col. 4, lines 32-34; and see Denton independent claims 1, 16, 32, 48, and 49 all pertaining to a flexible layer of non-woven fibers. There is no directionality linked to the flexibility in Denton, implying that the whole electrode is highly flexible regardless of axis. And Denton does not disclose a layer having any rigid axis. Moreover, Denton does not differentiate between a lateral axis and a transverse axis crossing the channels of the flow field. The present claims are drawn to a rigid transverse axis crossing the channels of the flow field. Denton is silent as to this feature.

In addition, "dimensionally stable," as used in Denton, appears to refer to resistance to linear dimensional change, for example, due to stretching. According to Denton, conventional gas diffusion electrodes based on woven cloth substrates have a problem in that they lack good dimensional stability as the cloth can be stretched in the x and y directions. Denton col. 2, lines 56-60. Another major problem is that conventional electrodes lack flexibility due to the rigid substrate that is typically used.

Denton col. 2, lines 50-55. The solution to these problems provided by Denton is a flexible and dimensionally stable (i.e., resistant to stretching) electrode.

Thus, in the case of Denton, dimensional stability does not comport with rigidity, as suggested by the Office Action at the top of page 5, and inability to stretch an object does not mean that object is rigid, *cf.*, the non-woven fibers of Denton versus the comparative woven fibers in Denton. Denton is expressly trying to overcome the rigidity of the conventional electrodes.

In sum, the reference fails to disclose all the features of independent claim 1. There is no disclosure of a rigid transverse axis, and particularly there is no disclosure of a rigid transverse axis that crosses channels of the flow field. Accordingly, the remaining dependent claims 2-10 are not anticipated by the reference. Applicants respectfully request reconsideration of the claims and withdrawal of the rejection.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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